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Finally Hazslinski (Mag. Szab. Disc. 220) gives the spores of what he took to be *Pezicula crataegi* Fckl. as 22-24 x 10μ. This in turn cannot be our plant. The species described above is a true *Dermatea.*

Dermatea puberula Durand n. sp. — Erumpent, usually forming elongated rows or patches bursting through clinks in the bark, sometimes 2-3 cm. long. Ascomata .75-1 mm. in diameter, 2 to many arising from a common stroma, whole plant cinereous, externally pulverulent with short hairs which give rise to cylindrical-clavate, hyaline, straight or curved, 1-celled conidia, 30 x 6μ. Asci clavate, apex rounded or usually truncate, pore violet with iodine, 150 x 12μ. Spores 8, obliquely uniseriate, hyaline, smooth, continuous, elliptical, 15-20 x 9-10μ. Paraphyses filiform, hyaline.

On dead stem of *Vitis* sp. hanging from a tree, Fall Creek, Ithaca, N. Y., January 13, 1898. E. J. Durand (Herb. Cornell no. 15096).

The plants are for the most part immature, only a few asci with spores being found. There are indications that the spores may become 1-3-septate at maturity. If so the plant would be a *Dermatella,* but different from D. viticola E. & E. The external hairs are not more than 10-15μ long.

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VARIABILITY IN OUR COMMON SPECIES OF DICTYOPHORA.

A. H. Christman.

Considerable uncertainty has existed as to the identification of our common species of Dictyophora. Fischer[1] remarks that nowhere among the Phalloideae is the confusion in the nomenclature so great as in the case of this genus and he believes that this confusion has been brought about by the naming of isolated specimens which have been given new specific names on the ground of some slight lack of agreement with descriptions already given.

Bosc[2], in 1811, was perhaps the first to report this fungus from America. He collected specimens in South Carolina and referred them to the genus Phallus with the specific name duplicatus Basc.

Schweinitz[3] reported Phallus duplicatus Bosc and Phallus indusiatus Vent. in 1831 and Phallus Daemonum Rumpf. was reported from Ohio by Berkley[1] in 1869. In 1873 Berkeley[2] gave a synopsis of the Phalloideae of North America and includes the three species mentioned above. He also gives localities from which they are reported and the names of the collectors, as follows: P. duplicatus Bosc reported from South Carolina by Wright; P. indusiatus Vent. from South Carolina by Ravenel and P. Daemonum Rumpf. from Alabama by Peters and by Ravenel.

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[1] Unterschungen zur vergleichenden Entwickelungsgeschichte und systematik der Phalloideen. Ed. Fischer,—Denk. der Schweiz. Nat. Gesell., Bd. XXXI,[1] 1. 1890.

[2] Phallus duplicatus Bosc. Bosc,— Gesell. Nat. Freunde zu Berlin, Vol. V., p. 86. Plt. VI, Fig 7.

[3] Synopsis of North American Fungi, Schweinitz,—Trans. of American Phil. Soc., Vol 4, p. 252. 1831.

In 1880, Gerard[3] listed the Phalloideae reported from the
Vol. VII, p. 11, 1880.
United States. The indusiate forms mentioned in this list are the same as those mentioned in Berkley's synopsis.

E. A. Rau[4] of Pennsylvania in 1882 found three specimens of what he suspected to be a new species of Phallus. Photographs were sent to .Kalchbrenner and to other mycologists Kalchbrenner concluded that the large trumpet-shaped veil and the small meshes toward the margin of the veil were characters of enough importance to distinguish this as a new species. He named the form P. togatus Kalch. The dimensions of the parts are as follows: Total height 18.7 cm., height of pileus 4.8 cm., length of veil 6.4 cm., diameter of volva 6.6 cm., diameter of stipe at the top of the volva 3.4 cm., diameter of the stipe at the lower margin of the pileus 2.8 cm.

Another supposedly new species Phallus collaris Cragin was reported and named by F. W. Cragin[5] in 1885. Two specimens were found in Shawnee County, Kansas. They were rather large and stout. Other distinguishing characteristics noted were the large pore at the apex of the stipe, the remnant of the peridium borne on the top of the pileus and the short veil, with large polygonal perforations, torn loose from beneath the pileus and protruding from the mouth of the ruptured volva. The measurements of this form are given. Total height 12.5 cm., height of pileus 4.4 cm., length of veil 1.8 cm., breadth of stipe at the base of the pileus 2.5 cm., at the summit of the volva 3.1 cm., breadth of the pileus 2.9 cm., breadth of the volva 5 cm.

In 1888, A. P. Morgan[6] included both P. duplicatus Bosc and P. Daemonum Rumpf. in a synopsis of North American Fungi. According to his descriptions P. duplicatus has an acute pileus and a long, often ragged veil, while P. Daemonum has a shorter veil and the apex of the pileus is truncate. In other characters they are very much the same.

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[1] Cuban Fungi. Berkeley,—Lin. Soc., Trans. of, Vol. X, p 343.

[2] North American Fungi. Berkeley,—Grevillea II, p. 33. 1873.

[3] List of United States Phalloideæ. Gerard,—Bull. Tor. Bot. Club,

[4] A New Phallus. Rau, E. A., Bot. Gaz., Vol. VIII, p 223.

[5] Phallus collaris. Cragin, F. W.,—Bull. Washburn College Lib. of Nat. Sc., Vol. I, No. 2. 1885.

[6] North American Fungi. Morgan, A. P.—Journal, Cincinnati Soc. of Nat. Hist., Vol. II, p. 141. 1888.

In a paper in 1890, Fischer[1] concludes that the five forms reported in the United States should all be included under Dictyophora phalloidea Desvaux. This species Fischer then subdivides into four varieties. Var. Campanulata Fischer is characterized by the absence of a collar surrounding the pore at the apex of the pileus, the flattened pseudoparenchymatous ridges on the outer surface of the pileus and the flattened bands of the veil. Var. typica Fischer has a collar at the apex of the pileus. The ridges on the pileus are high, even, and are pseudoparenchymatous. They continue into the collar at the apex. The veil is composed of cylindrical bands. Var. duplicata (Bosc) Fischer under which Fischer places our American forms, is characterized by a very broad collar at the apex of the pileus. The ridges are very high and toothed. The pileus and ridges have a hyphal structure. The veil has smaller meshes than either of the preceding varieties, the openings becoming smaller toward the free margin where it becomes almost membranous. Var. Farlowii n. var. Fischer differs from the others in having a non-reticulate pseudoparenchymatous veil.

In a later paper[2] Fischer adds two more varieties, making in all six varieties of D. Phalloidea Desvaux. These two are var. Guyanensis, n. var. Fischer, which has the surface of the pileus almost smooth, and var. Lauterbachii Fischer which has low ridges very irregularly placed.

Burt[3] in 1896 combined all the forms from the United States having a reticulate veil under one species, D. duplicata (Bosc) Ed. Fischer.

Fischer in a later paper[4] raises D. Phalloidea var. Farlowii Fischer to specific rank. This leaves D. Phalloidea Desvaux embracing five varieties.

The occurrence of this common Dictyophora in unusual numbers in the neighborhood of Madison during the summer of 1903, made it possible to make some interesting observations on the variability of the characteristic parts of the fungus. The specimens were found in the region lying along the south shore of Lake Mendota and extending a mile west of the city. The soil of this regian is covered with a sod shaded at places by growths of trees and is at other places completely open. Along a drive, leading through this tract, young forest trees had been planted from year to year. There is also a plot of about four acres on the University farm planted about eight years ago with various young forest trees. All of these young trees had been liberally mulched yearly, from the time of planting, with a fertilizer composed of equal parts of shavings and dung, and it was in and beneath this mulch that the fungi were most abundant.

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[1] Loc. cit.

[2] Neue untersuchungen zur vergleichenden Entwickelungsgeschichte und systematik der Phalloideen. Ed. Fischer,—Denkschriften der Schweiz. Nat. Gesell., Bd., XXXIII. 1893.

[3] Phalloideæ of the United States. Burt, E. A., Bot. Gaz. Vol. XXII, p. 387. 1896.

[4] Untersuchungen zur vergleichenden Entwickelungsgeschichte und systematik der Phalloideen. Fischer, Ed,—1890.

So numerous were the plants on the entire region that for a period of six weeks specimens could be found every day. As many as two dozen were often taken on a single morning. Probably as many as three hundred specimens were handled during the season. These were examined and types of all sizes and proportions were carefully measured and then preserved by drying or in alcohol. When it was desired to get a series of plants belonging to the same mycelium, certain clusters of the eggs were marked and specimens gathered from day to day as they matured.

In making the measurements it was aimed to secure specimens showing all possible variations. The following table gives

MEASUREMENTS* OF TWENTY SPECIMENS OF PHALLOIDEÆ.

Number.	Height of Plant.	Vertical diameter of of Volva.	Transverse diameter of Volva.	Vertical diameter of Pileus.	Transverse diameter of Pileus at Margin.	Length of Veil Below Pileus.	Diameter of Stipe at Margin of Pileus.	Diameter of Stipe at Apex of Volva.	Dimensions of Apical Pore.	Breadth of Collar around Apical Pore.
1	21.2	6.0	5.5	4.7	4.3	3.0	3.6	2.5	.6 x .4	1.2
2	19.5	5.0	5.0	4.0	3.6	1.5	3.9	2.5	.6 x .6	.4
3	19.1	3.6	4.5	4.5	2.8	2.0	3.5	1.8	.6 x .2	.0[1]
4	19.0	5.0	6.0	4.0	3.8	6.0	3.2	2.2	.5 x .4	.6
5	18.9	6.0	5.5	4.1	3.5	2.7	3.7	2.5	.7 x .4	.5
6	17.9	5.0	6.5	4.1	4.6	0.2[2]	4.2	3.0	.6 x .4	.0[1]
7	15.6	5.0	5.0	3.6	2.7	3.3	3.7	2.5	.6 x .4	.5
8	15.6	4.6	0.0[3]	4.0	3.8	5.5	3.6	2.5	.7 x .6	.8
9	15.2	5.0	6.3	4.0	4.0	3.0	4.2	3.3	1.0 x .0[4]	.2
10	15.0	5.5	6.0	3.5	2.7	1.8	2.7	2.0	.5 x .4	.4
11	14.4	5.0	4.0	4.2	2.6	3.5	2.6	2.0	.5 x .4	.5
12	13.7	4.2	4.0	3.5	3.0	2.0	2.3	2.0	.4 x .3	.5
13	13.4	5.0	4.5	4.1	3.5	1.0	3.2	2.8	1.2 x .2	.3
14	13.0	4.0	4.8	2.5	2.5	4.0	2.2	1.6	.6 x .0[4]	.2
15	12.8	4.5	5.3	3.0	2.9	3.0	3.8	2.5	.8 x .0[4]	.2
16	12.2	4.8	4.5	2.7	3.7	0.0[2]	3.8	3.2	0 .0[5]	.0[6]
17	11.8	4.2	4.6	2.6	2.7	0.0[3]	2.5	1.5	.5 x .4	.3
18	11.7	4.5	5.5	3.6	4.0	3.6	3.4	3.2	.8 x .5	.5
19	9.7	3.6	3.7	2.1	2.0	1.5	1.7	1.4	.4 x .2	.4
20	5.6	2.4	3.0	2.2	2.1	0.0[2]	1.2	1.0	.3 x .2	.1
Average ..	14.76	4.62	4.67	3.55	3.28	2.5	3.15	2.3	.62 x .31	.36

* All measurements are given in centimeters.

[1] None. [2] Just visible. [3] Torn. [4] Closed. [5] Not taken. [6] Very slight.

the dimensions of twenty plants including specimens showing the extreme variations in all of the characteristic parts of the plant. The specimens are arranged in the table according to height.

It will be seen that the extremely tall and extremely short specimens are not so numerous in the above table as are the more nearly average ones. As these are about equally scarce also in nature the above averages may safely be taken as approximately correct for all the specimens found during the season.

There is a fairly complete series from the shortest (5.6 cm.) to the tallest (21.2 cm.). Careful observations were made to determine, as nearly as possible, what conditions might be responsible for the height of the specimen. It was found that without exception the tall plants were solitary, were taken from sod, and, in almost every case, were in a fairly shaded, moist locality. Numbers 1 to 6 of the table, and many others, were found so located. The smaller specimens were found where the plants occurred in large clusters and were often taken after several plants in the cluster had matured. When a plant in the egg stage was found on a substratum, such as the mulch already mentioned, that readily became dry, it could be predicted with certainty that the resulting fungus would be small. Very immature eggs ($\frac{1}{2}$ to $\frac{3}{4}$ size) were often separated from their mycelial connections and taken into the greenhouse. These often decayed. A good share of them, however, developed after several days producing very small specimens. This indicates that food and moisture, together with the habit of growing singly or in clusters are important factors in determining size.

The volvae varied in size from 5.5 x 6 cm. to 2.4 x 3 cm. Where the eggs were in large groups they were often flattened against each other. A peculiar lobing was often caused in this way and also by foreign objects lying in contact with the egg. Eggs lying free in sod were spherical and smooth. The color of the eggs varied from white to pink or dirty brown.

The size and shape of the pileus was as variable as the other characteristics. The taller plants in general had the larger pilei. The shape varied from a broadly campanulate pileus, 2.7 cm. high by 3.7 wide at the lower margin in No. 16, to the tall conical pileus 4.2 cm. high by 2.6 in diameter at the base as in No. 11. There is no correlation between the shape of the pileus and the size and structure of the other parts. Some very tall specimens had campanulate pilei while others had the conical form, the same was true of the small specimens. The outer surface was always conspicuously reticulated, the edge of the ridges being acute and toothed. The ridges always extended to the pore at the apex. The pits enclosed by the ridges were in general deeper midway between the apex and the margin of the pileus and often became elongated in the vertical direction near the margin.

The size of the collar surrounding the pore was carefully noted since Fischer[1] stated that the absence of a collar is one of the chief characteristic marks of D. phalloidea var. campanulata. The large size of the collar is also mentioned by Morgan[2] in his description of D. duplicata. As a matter of fact this character is extremely variable. A complete series of forms was found, varying from those with absolutely no band surrounding the pore and with the gleba coming to its very margin, to those having a band 1.2 cm. wide from the edge of the pore to the free edge of the collar. The size of the pore varied from 0.3 cm. in diameter in No. 20 to 1.2 cm. in No. 13. Here again there was no correlation between the size of the collar and other characteristics, nor did the size of the collar depend upon the size of the pore. No. 6 has a broad, low pileus and no collar, while No. 3, also without the collar, has a relatively tall and conical pileus. No. 16 has the slightest trace of a collar. No. 1, which has the largest collar, has a large pileus with about an average relation between the height and diameter of the base.

The presence of a bit of gelatinous material, or a fragment of the volva on the apex of the pileus was mentioned by Cragin[1] in his description of P. collaris. It was found in one case where several plants were collected from the same mycelium that a complete series of variations in this character existed. This series of specimens varied from one with an open pore to one in which the membrane of the volva had ruptured at the side and one-third of the peridium was borne on the apex of the pileus. These specimens were gathered near the close of the season. It was afterwards noted that when the cool weather began to retard the development of the plants a greatly increased proportion of the specimens was found with part of the peridium covering the pileus.

There is no other part of the whole plant that shows as great variation in both size and structure as does the veil. The veil of a given specimen may vary with the age of the specimen when collected, or with the surrounding conditions. It was often observed that the veil expanded after the stipe had fully elongated. In other specimens the expansion of the veil was more rapid than the elongation of the stipe. In such cases the veil protruded from between the pileus and the volva as a large fold, which later straightens out and hangs free when the stipe is fully extended. When a specimen had been exposed to a dry atmosphere for a short time the veil became much shrunken. The measurements given in the table were taken from specimens gathered at about ten o'clock in the forenoon. Care was taken to measure the length of the veil when it was most fully expanded. While the outside conditions in which the plant is found, may modify the dimensions of the veil, there is no doubt that the actual amount of material which enters into it is as variable as any other feature of the plant.

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[1] Loc. cit.
[2] Loc. cit.
[1] Loc. cit.

The structure of the veil also varies extremely. In some cases it is a delicate pseudoparenchymatous membrane perforated with many rounded holes, in others it is a net composed of heavy bands and with large angular openings. In some cases the veil was found to be separated from its attachment to the stipe and was borne in the mouth of the ruptured volva. This may have been due to weakness in the attachment, the latter being so slight as to be insufficient to hold the weight of the veil, or the material of the volva may have been pressed so closely to the base of the stipe that the margin of the veil was held fast when the stipe elongated. Probably both factors contributed to bringing about this condition.

Beside the true reticulate pseudoparenchymatous veil I found, on many specimens, also a membranous hyphal veil. This veil hung between the true veil and the stipe. In the egg this structure is attached to the stipe just below the attachment of the reticulate veil. From this region it extends downward and is attached to the basal end of the stipe. When the stipe expands this veil is often torn loose from its attachment beneath the pileus in which case it appears as a lining of the volva. Very often, however, the break occurs somewhere between the upper attachment and the base of the stipe. In the latter case the upper part appears as a delicate membranous veil hanging beneath the true veil. If such a specimen is gathered before the true veil has expanded, or in cases where the true veil has been torn away the plant might readily be mistaken for a form allied to D. Ravenelii described by Burt.[1] Many specimens were preserved in which the true veil had only partly expanded and these show both veils very plainly. I find no reference to this inner membraneous veil in the literature, but it is certainly a conspicuous feature in very many of the specimens collected in this region.

In numbers 4, 7, 8, 11, 14, and 18 we have examples of very long veiled types. These vary in height from 11.7 to 19 cm. The tallest, in size and general proprotions, resembles the figure of Rau's P. togatus. From this the other specimens mentioned make a complete series from the tall to the very short stocky type. In No. 18 we have a short stout plant, in dimensions very much like P. collaris Cragin except that the veil is not torn from its attachment. One specimen, not mentioned in the table, is preserved and many others were found that did have the veil in the mouth of the volva. The one preserved is of much the same size and shape as No. 18 and doubtless represents the type of Cragin's P. collaris. Considering the whole series it will be seen that it embraces examples of every form of Dictyophora with the reticulate veil that has been so far reported from the United States.

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[1] Loc. cit.

The absence of a collar in some specimens, which has also been mentioned by Morgan[1] as a character of P. duplicatus (Bosc) suggests that these forms might be placed under Fischer's var. campanulata. Our specimens, however, all have high ridges on the pileus, and the pileus has a hyphal structure. Our specimens also differ from var. typica Fischer in this hyphal structure of the pileus. The bands of the veil in var. typica are cylindrical instead of flat as in our form. The presence of a netted instead of a membranous veil, distinguishes it from Fischer's var. Farlowii and the high toothed ridges on the pileus from his vars. Guyanensis and Lauterbachii.

Burt's argument in favor of retaining D. duplicata (Bosc) E. Fischer as a species seems conclusive.

The range of variability in the height of the plant must be taken as from 5.6 to 24 c. m. instead of from 15 to 24 c. m. The apical collar also, which seems to have been always present in the forms seen by Burt, must be regarded as varying in width from 0 to 1.2 c. m.

Madison, Wis., March 28, 1904.

A NEW HYPHOLOMA.

T. D. A. COCKERELL.

The following species, collected in New Mexico, seems to be new — in which opinion Professor Earle coincides. The description is as follows:

HYPHOLOMA PECOSENSE Cockerell n. sp. — Pileus 2½ to nearly 4 cm. diam., slightly convex, middle of disc low-conical in some, margin nearly vertical, surface smooth, slightly inclined to be viscid; not at all straite, scaly or silky; creamy-white, more ochreous centrally, but always pallid; margin with remains of veil as light yellow irregular scales; *gills* pale purplish gray, inclined to be white at junction with stipe, their margins minutely white-furfuraceous; *stipe* 5½ to nearly 9 cm. long, yellowish-white or very pale ochraceous, slightly striate from the very narrowly decurrent gills above, and also albofurfuraceous, otherwise smooth and shining; upper part hollow. Flesh mild, not bitter, not changing color on bruising or breaking. Spores purple-brown, quite dark, oval, 12 μ long, 8 broad.

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[1] Loc. cit.